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GenCore version 5.1.6
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OM nucleic - nucleic search, using sw model

Run on: June 17, 2003, 11:16:03 ; Search time 226.903 Seconds
(without alignments)
10331.847 Million cell updates/sec

Title: US-09-807-933B-12
Perfect score: 1041
Sequence: 1 atgaagttctccatcgcc.....ctggttcgagcgcaagtaa.1041

Scoring table: IDENTITY_NUC
Gapop 10.0 , Gapext 1.0

Searched: 2185239 seqs, 112599159 residues
Total number of hits satisfying chosen parameters: 4370478

Minimum DB seq length: 0
Maximum DB seq length: 2000000000

Post-processing: Minimum Match 0%
Maximum Match 100%
Listing first 45 summaries

| Database : | | | |
|--------------------|--|--|--|
| N_Geneseq_101002:* | | | |
| 1: | /SIDS2/gcgdata/geneseq/geneseqn-emb1/NA1980.DAT:* | | |
| 2: | /SIDS2/gcgdata/geneseq/geneseqn-emb1/NA1981.DAT:* | | |
| 3: | /SIDS2/gcgdata/geneseq/geneseqn-emb1/NA1982.DAT:* | | |
| 4: | /SIDS2/gcgdata/geneseq/geneseqn-emb1/NA1983.DAT:* | | |
| 5: | /SIDS2/gcgdata/geneseq/geneseqn-emb1/NA1984.DAT:* | | |
| 6: | /SIDS2/gcgdata/geneseq/geneseqn-emb1/NA1985.DAT:* | | |
| 7: | /SIDS2/gcgdata/geneseq/geneseqn-emb1/NA1986.DAT:* | | |
| 8: | /SIDS2/gcgdata/geneseq/geneseqn-emb1/NA1987.DAT:* | | |
| 9: | /SIDS2/gcgdata/geneseq/geneseqn-emb1/NA1988.DAT:* | | |
| 10: | /SIDS2/gcgdata/geneseq/geneseqn-emb1/NA1989.DAT:* | | |
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| 14: | /SIDS2/gcgdata/geneseq/geneseqn-emb1/NA1993.DAT:* | | |
| 15: | /SIDS2/gcgdata/geneseq/geneseqn-emb1/NA1994.DAT:* | | |
| 16: | /SIDS2/gcgdata/geneseq/geneseqn-emb1/NA1995.DAT:* | | |
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| 19: | /SIDS2/gcgdata/geneseq/geneseqn-emb1/NA1998.DAT:* | | |
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| 21: | /SIDS2/gcgdata/geneseq/geneseqn-emb1/NA2000.DAT:* | | |
| 22: | /SIDS2/gcgdata/geneseq/geneseqn-emb1/NA2001A.DAT:* | | |
| 23: | /SIDS2/gcgdata/geneseq/geneseqn-emb1/NA2001B.DAT:* | | |
| 24: | /SIDS2/gcgdata/geneseq/geneseqn-emb1/NA2002.DAT:* | | |

Pred. No. is the number of results predicted by chance to have a score greater than or equal to the score of the result being printed, and is derived by analysis of the total score distribution.

SUMMARIES

| Result No. | Score | Query Match | Length DB | ID | Description |
|------------|-------|-------------|-----------|----|-------------|
| 1 | 1041 | 100.0 | 1041 | 21 | AA62731 |
| 2 | 1041 | 100.0 | 1041 | 24 | AA62731 |
| 3 | 393.6 | 37.8 | 1017 | 21 | AA62729 |
| 4 | 393.6 | 37.8 | 1017 | 24 | AA62729 |
| 5 | 382.8 | 36.8 | 1164 | 21 | AA62730 |
| 6 | 382.8 | 36.8 | 1164 | 24 | AA62730 |
| 7 | 363.4 | 34.9 | 1083 | 21 | AA62728 |
| 8 | 363.4 | 34.9 | 1083 | 24 | AA62728 |
| 9 | 333.8 | 32.1 | 1043 | 21 | AA62732 |

| | | | | | | |
|----|-------|------|------|----|-----------|--------------------|
| 10 | 333.8 | 32.1 | 1043 | 24 | AA62731 | Rhizopus arrhizus |
| 11 | 304.2 | 29.2 | 1017 | 21 | AA62726 | Endoglucanase nucl |
| 12 | 304.2 | 29.2 | 1017 | 24 | AA62726 | Rhizopus arrhizus |
| 13 | 289.6 | 27.8 | 1101 | 21 | AA62727 | Endoglucanase nucl |
| 14 | 289.6 | 27.8 | 1101 | 24 | AA62727 | Rhizopus arrhizus |
| 15 | 241 | 23.2 | 922 | 19 | AAV15073 | Hybrid DNA compri |
| 16 | 236.6 | 22.7 | 1423 | 17 | AAAT39049 | CDNA encoding cell |
| 17 | 235.2 | 22.6 | 1473 | 12 | AAQ14857 | Fusarium oxysporum |
| 18 | 235.2 | 22.6 | 1473 | 13 | AAQ26407 | Fusarium oxysporum |
| 19 | 235.2 | 22.6 | 1473 | 13 | AAQ26382 | Endoglucanase #2. |
| 20 | 235.2 | 22.6 | 1473 | 13 | AAQ25933 | Cellulase containe |
| 21 | 235.2 | 22.6 | 1473 | 13 | AAQ25935 | Endoglucanase gene |
| 22 | 235.2 | 22.6 | 1473 | 14 | AAQ49942 | Endoglucanase enzy |
| 23 | 235.2 | 22.6 | 1473 | 16 | AAZ60179 | F. oxysporum endog |
| 24 | 235.2 | 22.6 | 1473 | 19 | AAV16103 | Fusarium oxysporum |
| 25 | 233.6 | 22.4 | 1473 | 14 | AAQ41733 | Dye transfer inhib |
| 26 | 233.2 | 22.4 | 960 | 17 | AAAT39047 | CDNA encoding cell |
| 27 | 231.8 | 22.3 | 927 | 17 | AAAT39062 | Chimeric endogluc |
| 28 | 231.2 | 22.2 | 672 | 24 | AA62731 | Humicola insolens |
| 29 | 231.2 | 22.2 | 672 | 24 | AA62731 | Humicola insolens |
| 30 | 230.4 | 22.1 | 894 | 17 | AAAT39061 | Chimeric endogluc |
| 31 | 228 | 21.9 | 1174 | 17 | AAAT39050 | CDNA encoding cell |
| 32 | 228 | 21.9 | 1174 | 19 | AAV39096 | Monocomponent endo |
| 33 | 226.2 | 21.7 | 984 | 19 | AAV16105 | Fusarium oxysporum |
| 34 | 224.6 | 21.6 | 925 | 19 | AAV15076 | Hybrid DNA compri |
| 35 | 222.8 | 21.4 | 928 | 19 | AAV15074 | Hybrid DNA compri |
| 36 | 218.8 | 21.0 | 807 | 19 | AAV16104 | Humicola insolens |
| 37 | 217.2 | 20.9 | 1058 | 13 | AAQ26405 | Humicola insolens |
| 38 | 217.2 | 20.9 | 1060 | 12 | AAQ14856 | Humicola insolens |
| 39 | 217.2 | 20.9 | 1060 | 13 | AAQ26380 | Endoglucanase #1. |
| 40 | 217.2 | 20.9 | 1060 | 13 | AAQ25932 | Cellulase containe |
| 41 | 217.2 | 20.9 | 1060 | 13 | AAQ25934 | Endoglucanase gene |
| 42 | 217.2 | 20.9 | 1060 | 13 | AAQ30067 | Sequence encoding |
| 43 | 217.2 | 20.9 | 1060 | 14 | AAQ41732 | Dye transfer inhib |
| 44 | 217.2 | 20.9 | 1060 | 14 | AAQ49941 | Endoglucanase enzy |
| 45 | 217.2 | 20.9 | 1060 | 16 | AAZ60178 | H. insolens endogl |

ALIGNMENTS

RESULT 1
AAA62731
ID AAA62731 standard; DNA; 1041 BP.
XX
AC AAA62731;
XX
DT 25-SEP-2000 (first entry)
XX
DE Endoglucanase nucleotide sequence 6.
XX
KW Endoglucanase: cellulose breakdown; produce pulp; papermaking;
XX animal foodstuff; ss.
XX
OS Phycomyces nitens.
XX
PN WO200024879-A1.
XX
PD 04-MAY-2000.
XX
PF 25-OCT-1999; 99WO-JP05884.
XX
PR 23-OCT-1998; 98JP-0302387.
XX
PA (MEIJU) MEIJI SEIKA KAISHA LTD.
XX
PI Nakamura Y, Moriya T, Baba Y, Yanai K, Sumida N, Nishimura T;
XX Murashima K, Nakane A, Yaguchi T, Koga J, Murakami T, Kono T;
XX WPI; 2000-365117/31.
XX P-PSDB; AA809826.
XX
PT Endoglucanases cf fungal origin with high activity under alkaline


```
QY 1 ATGAAGTTCTCCATCATCGCTTCGCGCCTTCTCTCGCTGCCAGCTCCACTTACGCTGCT 60
DB 1 ATGAAGTTCTCCATCATCGCTTCGCGCCTTCTCTCGCTGCCAGCTCCACTTACGCTGCT 60
QY 61 GAATGAGCCAGGCTATGCGCAGTGTGTGGCAAGATGTGAGTGGTCCACTGCTGTC 120
DB 61 GAATGAGCCAGGCTATGCGCAGTGTGTGGCAAGATGTGAGTGGTCCACTGCTGTC 120
QY 121 ACCTCGGCTTCACTGTGTAGTGTGGCAAGCAACGAGTGTGACTCTCAGTGTATCCCC 180
DB 121 ACCTCGGCTTCACTGTGTAGTGTGGCAAGCAACGAGTGTGACTCTCAGTGTATCCCC 180
QY 181 AACGATCAAGTCCAGGCTTAACCCCAAGACCAACCAACCAACCAACCAACCAACCAACCA 240
DB 181 AACGATCAAGTCCAGGCTTAACCCCAAGACCAACCAACCAACCAACCAACCAACCAACCA 240
QY 241 ACCACCAAGGCTCTCTACCAACCAACCAAGGCAACCAACCAACCAACCAACCAAGGCCCT 300
DB 241 ACCACCAAGGCTCTCTACCAACCAACCAAGGCAACCAACCAACCAACCAACCAAGGCCCT 300
QY 301 GTCAACCAACCAAGGCTCTCTACCAACCAACCAAGGCAACCAACCAACCAACCAAGGCCCT 360
DB 301 GTCAACCAACCAAGGCTCTCTACCAACCAACCAAGGCAACCAACCAACCAACCAAGGCCCT 360
QY 361 ACCAAGGCTGCCACCAACCAACCAAGGCTCTCTACCAACCAACCAAGGCTGCCACT 420
DB 361 ACCAAGGCTGCCACCAACCAACCAAGGCTCTCTACCAACCAACCAAGGCTGCCACT 420
QY 421 TTCTCTGGAAGGCTCGCACTACCCGCTACTCGGCTATGCGGCTTGTGCAAGCCCTTTCGCGCTG 480
DB 421 TTCTCTGGAAGGCTCGCACTACCCGCTACTCGGCTATGCGGCTTGTGCAAGCCCTTTCGCGCTG 480
QY 481 GACGGAAGGCTCTCTACCAACCAACCAAGGCTCTCTACCAACCAACCAAGGCTCTCTACG 540
DB 481 GACGGAAGGCTCTCTACCAACCAACCAAGGCTCTCTACCAACCAACCAAGGCTCTCTACG 540
QY 541 CTGCGGTCCGATGTCAGAGCGGTTCGCTCGGCGGCGGCGGCTTACATGTGCAATGACAAC 600
DB 541 CTGCGGTCCGATGTCAGAGCGGTTCGCTCGGCGGCGGCGGCTTACATGTGCAATGACAAC 600
QY 601 CAGCCCTGGGTTGTAATGACGACCTTGTGCTACGCTTTCGCTGCTGCGGCTGCTGCTGCTG 660
DB 601 CAGCCCTGGGTTGTAATGACGACCTTGTGCTACGCTTTCGCTGCTGCGGCTGCTGCTGCTG 660
QY 661 GCGGTGCTCTGCTGCTGCGGCTGCTGCTGCGGCTGCTGCTGCGGCTGCTGCTGCTGCTG 720
DB 661 GCGGTGCTCTGCTGCTGCGGCTGCTGCTGCGGCTGCTGCTGCGGCTGCTGCTGCTGCTG 720
QY 721 GCTGGCAAGAGTTTCTGCTCCAGGTTCACCAACACCGGTGATGATCTCAGACCAACCAAC 780
DB 721 GCTGGCAAGAGTTTCTGCTCCAGGTTCACCAACACCGGTGATGATCTCAGACCAACCAAC 780
QY 781 TTTGATTTCAGATGCTCCGCGGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTG 840
DB 781 TTTGATTTCAGATGCTCCGCGGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTG 840
QY 841 AACACCAACCAAGGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTG 900
DB 841 AACACCAACCAAGGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTG 900
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DB 901 GACAAGCTTCTACCAAGGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTG 960
QY 961 GCTGCAACCAAGGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTG 1020
DB 961 GCTGCAACCAAGGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTG 1020
QY 1021 ACTGGTTCGAGCGCAAGTAA 1041
DB 1021 ACTGGTTCGAGCGCAAGTAA 1041
```

RESULT 3

AAAG2729 standard; DNA; 1017 BP.

XX AAAG2729;

XX 25-SEP-2000 (first entry)

XX Endoglucanase nucleotide sequence 4.

XX Endoglucanase; cellulose breakdown; produce pulp; papermaking; animal foodstuff; ss.

XX Mucor circinelloides.

XX WO200024879-A1.

XX 04-MAY-2000.

XX 25-OCT-1999; 93WO-JP05884.

XX 23-OCT-1998; 98JP-0302387.

XX (MEIJ) MEIJI SEIKA KAISHA LTD.

XX Nakamura Y, Moriya T, Baba Y, Yanai K, Sumida N, Nishimura T;
XX Murashima K, Nakane A, Yaguchi T, Koga J, Murakami T, Kono T;

XX WPI; 2000-365117/31.

XX P-PSDB; AAB09824.

XX Endoglucanases of fungal origin with high activity under alkaline
XX conditions for production of paper pulp and animal feedstuffs -

XX Claim 44; Page 118-119; 180pp; Japanese.

XX This sequence encodes an endoglucanase protein. The invention relates
XX to an endoglucanase of fungal origin which can completely break down
XX purified cellulose at a concentration of less than 1mg protein/litre,
XX and produces more than 50% breakdown of cellulose at pH 8.5. The
XX invention includes endoglucanase protein sequences (see
XX AAB09825-B09830), endoglucanase nucleotide sequences (see
XX AAAG2726-A62732) and primers (AAAG2733-A62802) which are used in the
XX identification of the endoglucanase sequences, and in the construction of
XX vectors containing the polynucleotides. The endoglucanase enzymes are
XX used for the production of pulp for papermaking and for the production of
XX animal foodstuffs.

SQ Sequence 1017 BP; 233 A; 255 C; 236 G; 293 T; 0 other;

Query Match 37.8%; Score 393.6; DB 21; Length 1017;

Best Local Similarity 63.7%; Pred. No. 8.6e-76;

Matches 634; Conservative 0; Mismatches 329; Indels 33; Gaps 1;

QY 46 TCACCTTACGCTGCTGAATGATGAGCAAGGCTATGGCAGTGTGGTGGCAAGATGTGGACT 105

DB 55 TCTGCTGAGCTGCTTCTTGGAGCTCTGTCTATGTGTCATGTGGTGGCATTTGATGGAGT 114

QY 106 GTTCCACCTGTGTGACCTTCCGCTTACCTGTGTAGGTGCGCAAAACAAACGAGTGGTAC 165

DB 115 GGACCTACCTGTGTGAAAGTGGCTCTACTTGGTGTCTCAAGAGGCAACAAATACTAC 174

QY 166 TCTCAGTGTATCCCAACGATCAAGTCCAGGGTAAACCCCAAGACCAACCAACCAACCA 225

DB 175 TCTCAATGTCTTCCCGGATCCCA-----CACT 201

QY 226 ACCAAGGCTGCCACTTACCAACCAAGGCTCTGTGTCACCAACCAAGGCAACCAACCAAC 285

DB 202 AACATGCTGGTAAACGCTAGGACCAAGAGACATCTACCAAGACATCTACTACCACC 261

QY 286 ACCACCAAGGCGGCTGTCTACCAACCAACCAACCAACCAACCAACCAACCAACCAAC 345

262 GCCAAGCTACTGCTACTGTACCAACCAAGACAGTAAACCAAGACACTTACCAAGCAACT 321
346 ACCAAGACCAACCAACCAAGCTGACCAACCACTCTCTTCCAACTGCTGCTACAGC 405
322 ACCAAGACTAGCACTACTGCGCTGCTTCTACTTCCAACTCTTCTCTGCTGCTTACAAG 381
406 CCCATTCTGCTGCTTCTCTGAAACGGTTCGACCTACCGCTACTGGAATGCTGCAAG 465
382 GTCACTCTGCGGTAAATCTGCAAGTGTTCACCAACTCGTTATTGGGATTTGTGTA 441
466 CCCTCTTGGCTGGGAGCAAGCTTCTGTAACCTGCTACTTCACTGCTGCTGCTGCT 525
442 GTCTCTTGGAGCTGCTGCAAGAGCTTCTGCTCACTGCTGCTTCACTGCTGCTGCT 501
526 GATGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCT 585
502 AATGCTATCTTATTAGATGCTCAAGTGTGTTGTAACGCTGCTGCTGCTGCTGCT 561
586 ATGTCGAATGACCAACCAAGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCT 645
562 ATGTCGAATGACCAACCAAGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCT 621
646 GCCAGTCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCT 705
622 GCCTCTATTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCT 681
706 ACCAAGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCT 765
682 ACTTCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCT 741
766 CTCAGCACAACCACTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCT 825
742 TTAGCTCTAACTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCT 801
826 TGCCAGTCCAGTGGAAACCAACCAAGCTGCTGCTGCTGCTGCTGCTGCTGCT 885
802 TGTGCTGCTCAATGGGCGCTCCCAATGATGCTGGGAGCTAGATATGCTGCTGCT 861
886 TCTATTGAGTGGAGCAAGCTTCTACCCAGTTCGAGGCTGCTGCTGCTGCTGCT 945
862 TCTGCTCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCT 921
946 GGATGCTTCAAGACGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCT 1005
922 AACTGCTTCAAGACTCTGATTAACCTTCACTGCTGCTGCTGCTGCTGCTGCT 981
1006 GAGATCAATGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCT 1041
982 GAATTAAGTCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCT 1017

RESULT 4

AA43247
ID AAL43247 standard; DNA; 1017 BP.
XX
AC AAL43247;
XX
DT 22-AUG-2002 (first entry)
XX
DE Rhizopus arrhizus endoglucanase-related coding sequence 4.
XX
KW Zymogycetes-originated endoglucanase; cellulose binding domain;
KW fibre processing; waste paper de-linking; paper pulp; ds, gene.
XX
OS Mucor circinelloides.
XX
FN W020024274-Al.
XX
PD 30-MAY-2002.
XX
PF 21-NOV-2001; 2001WO-JP10188.
XX
PR 21-NOV-2000; 2000JP-0354296.

(MEIJ) MEIJI SEIKA KAISHA LTD.
Nakane A, Baba Y, Koga J, Kubota H;
WPI; 2002-471729/50.
P-PSDB; AAO15055.
Cellulose-binding domain-lacking Zymogycetes-originated endoglucanase,
with effect of endoglucanase activity enhanced in processing fibers,
deinking waste paper and improving freeness of paper pulp -
Disclosure; Page 70-73; 109pp; Japanese.
The invention comprises the amino acid and coding sequences of
zymogycetes-originated endoglucanase enzymes lacking the cellulose
binding domain. The zymogycetes-originated endoglucanase enzymes of the
invention have enhanced endoglucanase activity. The zymogycetes-
originated endoglucanase enzymes of the invention are useful for
processing fibres, de-linking waste paper and improving the freeness of
paper pulp - which is particularly applicable in detergent compositions.
The present DNA sequence represents an endoglucanase-related gene
sequence of the invention.
XX Sequence 1017 BP; 233 A; 255 C; 236 G; 293 T; 0 other;
SQ
Query Match 37.8%; Score 393.6; DB 24; Length 1017;
Best Local Similarity 63.7%; Pred. No. 8.6e-76;
Matches 634; Conservative 0; Mismatches 329; Indels 33; Gaps 1;
46 TCCACTAGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCT 105
55 TCTGCTGAACTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCT 114
106 GGTCCACCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCT 165
115 GGAACCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCT 174
166 TCTCACTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCT 225
175 TCTCAATGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCT 201
226 ACCAAGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCT 285
202 AACATGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCT 261
286 ACCAAGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCT 345
262 GCCAAGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCT 321
346 ACCAAGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCT 405
322 ACCAAGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCT 381
406 CCCATTCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCT 465
382 GTCACTCTGCGGTAAATCTGCAAGTGTTCACCAACTCGTTATTGGGATTTGTG 441
466 CCCTCTTGGCTGGGAGCAAGCTTCTGTAACCTGCTACTTCACTGCTGCTGCT 525
442 GTCTCTTGGAGCTGCTGCAAGAGCTTCTGCTCACTGCTGCTGCTGCTGCT 501
526 GATGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCT 585
502 AATGCTATCTTATTAGATGCTCAAGTGTGTTGTAACGCTGCTGCTGCTGCT 561
586 ATGTCGAATGACCAACCAAGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCT 645
562 ATGTCGAATGACCAACCAAGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCT 621
646 GCCAGTCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCT 705
622 GCCTCTATTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCT 681

| | | | |
|----------|--|---|------|
| Db | 1127 | CTGAATTAACTACTCGCTAGGTTGCGAAAGTAAGTAA | 1164 |
| Db | 1127 | CTGCAAGAGGCTACTGCTACTGTTTACACCAAGACAGTAACCAAGACAACTACCAAGACAA | 466 |
| Qy | 344 | CCACCAAGACCAACCAACCAAGGCTGCACCAACCACTCTCTCTTCCAAACACATCGGTACAA | 403 |
| Db | 467 | CTACCAAGACTAGCACTACTGCGCTGCTTCTACTTCCACCTCTTCTTCTGCTGGTTACA | 526 |
| Qy | 404 | GCCCCATTCTGCTGGGTTCTCTGGAAGGCTGCACCTACCCGCTACTCGGATTTGCTGCA | 463 |
| Db | 527 | AGGTCACTCTCTGGCGGTAATCTGGCAGTGGTTCCACAACCTCGTTATTTGGGATTTGTTGA | 586 |
| Qy | 464 | AGCCTCTTGGCGCTGGGACGGAAGGCTTCTGTAACCTAAAGCTGTACTACCTCTGTGCA | 523 |
| Db | 587 | AAGCTTCTGAGCTGGCTCGAAAGCTTCTGCTACTGCTGCTGTTGACACCTGTGCT | 646 |
| Qy | 524 | AGGATGCTGTCAGCGCTCTCGGTTCCGATGTCAGAGCGGTTGCGTCCGCGGCGCAGGCT | 583 |
| Db | 647 | CCAATGGTATCTTTTATTAGATGCAATGCTCAAGTGGTTGTAACCGTGTATGTT | 706 |
| Qy | 584 | ACATGTGCAATGACAAACGAGCTGGGTTGCAATGACGACCTTGCCCTACGTTTCGCTG | 643 |
| Db | 707 | TCATGTGTAACAAACCAACCAACCTTGGGCTGTCATGATGATGAGCTCGCTTACGTTTCGCTG | 766 |
| Qy | 644 | CTGCCAGTCTCGGTAGCGCGCTGCTCTGCAATCTGCTGGCGGCTGTTTACGAGCTTACCT | 703 |
| Db | 767 | CTGCTCTTATGCTGCTTCCACGAGCTGGATGGTGTGCTGCTGTTTATGAATGACCT | 826 |
| Qy | 704 | TCACCAACACTGCTGCTGCTGGCAAGAGTTTGTCTCAGGTACCAACACCGGCTGATG | 763 |
| Db | 827 | TCACCTTCTGGCGCTGCTTCTGGAAGAGATGTTGTTCAAGTTTACCAACACCGGTTGGG | 886 |
| Qy | 764 | ATCTCAGACCAACCACTTGTGATGTCAGATCCCGGGGCTGCTGCTGCTACTTCAACG | 823 |
| Db | 887 | ATTAGGCTCTAACCACTTGTGTTGCAATGCTGGTGGTGGCTGCTGCTGCTCAATG | 946 |
| Qy | 824 | GCTGCCAGTCCAGTGGAAACACCAACACCGATGGTGGGCTGCTGCTGCTATGGCGGTATTA | 883 |
| Db | 947 | GCTGTGCTGCTCAATGGGCGCTCCCAATGATGGCTGGGAGCTAGATATGGTGGTGTCA | 1006 |
| Qy | 884 | GCTCTATTTTCAGAGTGGACAGCTTCTTACCAGTTGCGAGCTGGTTCAGAGTGGAGAT | 943 |
| Db | 1007 | GCTCTGCTGCTGCTGCTGCTTCTTCTTCTGCTGCTTCTTCAAGTGGTGTATGATGAGAT | 1066 |
| Qy | 944 | TCGGATGTTTCAAGAACGCTGACCAACCCAGAGTCACTTCAAGGCTGTTTACTTGGCCCTG | 1003 |
| Db | 1067 | TCAACTGGTTCAGAACTCTGATAACCTTACCATGACCTTCAAGGAAGTTTACCTGCTCTG | 1126 |
| Qy | 1004 | CCAGATCAATGTCAGACTGGTTCGAGCGCAAGTAA | 1041 |
| Db | 1127 | CTGAATTAACTACTCGCTCAGGTTGCGAAAGTAAGTAA | 1164 |
| Db | 1127 | CTGAATTAACTACTCGCTCAGGTTGCGAAAGTAAGTAA | 1164 |
| RESULT 7 | | | |
| AAA62728 | | | |
| ID | AAA62728 | standard; DNA; 1083 BP. | |
| XX | XX | | |
| AC | AAA62728; | | |
| XX | XX | | |
| DT | 25-SEP-2000 | (first entry) | |
| XX | XX | | |
| DE | Endoglucanase nucleotide sequence 3. | | |
| XX | XX | | |
| KW | Endoglucanase; cellulose breakdown; produce pulp; papermaking; | | |
| KW | animal foodstuff; ss. | | |
| XX | XX | | |
| OS | Rhizopus oryzae. | | |
| XX | XX | | |
| FN | WO200024879-A1. | | |
| XX | XX | | |
| PD | 04-MAY-2000. | | |
| XX | XX | | |
| PF | 25-OCT-1999; 99WO-JP05884. | | |
| XX | XX | | |
| PR | 23-OCT-1998; 98JP-0302387. | | |

Query Match 36.8%; Score 382.8; DB 24; Length 1164;

Best Local Similarity 62.9%; Pred. No. 1.9e-73;

Matches 628; Conservative 0; Mismatches 337; Indels 33; Gaps 1;

| | | | |
|----|-----|---|-----|
| Qy | 44 | GCTCCACTTACCTGCTGATGAGCAGCAAGGCTATGCGCAGTGTGGTGGCAAGATGTTGA | 103 |
| Db | 200 | GTTCTCTCTCATCATCATCATGATGATGTTCCGCTCTATAGTCAATGCGGTGGCATTTGATGA | 259 |
| Qy | 104 | CTGGTCCACCTGCTGACCTCGGCTTCCACCTGTGTAGGTCCGAAACCAACGAGTGGT | 163 |
| Db | 260 | GTGGACCTACCTTGTGAAAGTGGCTTACTTGGCTGCTCAAGAGGCAACAATACT | 319 |
| Qy | 164 | ACTCTCAGTGTATCCCCAAGCATCAAGTCCAGGGTAAACCCCAAGACCACCAACCA | 223 |
| Db | 320 | ACTCTCAATGCTTTCGGGATCCCA-----CA | 346 |
| Qy | 224 | CCACCAAGGTGCTGCTTACCAAGGCTTCTGTACACCAACCAAGGCAACCAACCA | 283 |
| Db | 347 | GTAAACATGCTGTAAAGCTAGCAGCAGCAAGAGACATCTACCAAGACATCTACTACA | 406 |
| Qy | 284 | CCACCAAGGCGCTGTGCTCACCACCAAGGCTTACTACTACCAACCAAGCA | 343 |

Cellulose-binding domain-lacking Zygomycetes-originated endoglucanase, with effect of endoglucanase activity enhanced in processing fibers, deinking waste paper and improving freeness of paper pulp -

Disclosure; Page 75-78; 109pp; Japanese.

The invention comprises the amino acid and coding sequences of zygomycetes-originated endoglucanase enzymes lacking the cellulose binding domain. The zygomycetes-originated endoglucanase enzymes of the invention have enhanced endoglucanase activity. The zygomycetes-originated endoglucanase enzymes of the invention are useful for, processing fibers, de-inking waste paper and improving the freeness of paper pulp - which is particularly applicable in detergent compositions. The present DNA sequence represents an endoglucanase-related gene sequence of the invention.

Sequence 1164 BP; 272 A; 289 C; 266 G; 337 T; 0 other;

Db 1127 CTGAATTAACTACTCGCTAGGTTGCGAAAGTAAGTAA 1164

RESULT 6

ALAL43248
ID ALAL43248 standard; DNA; 1164 BP.

XX AC
XX AAL43248;

XX 22-AUG-2002 (first entry)

XX Rhizopus arrhizus endoglucanase-related coding sequence 5.

XX Zygomycetes-originated endoglucanase; cellulose binding domain;
KW fibre processing; waste paper de-inking; paper pulp; ds; gene.

XX Mucor circinelloides.

XX WO200242474-A1.

XX 30-MAY-2002.

XX 21-NOV-2001; 2001WO-JP10188.

XX 21-NOV-2000; 2000JP-0354296.

XX (MEIJ) MEIJI SEIKA KAISHA LTD.

XX Nakane A, Baba Y, Koga J, Kubota H;

XX WPI; 2002-471729/50.

XX P-PSDB; AAO15056.

PT Cellulose-binding domain-lacking Zygomycetes-originated endoglucanase,
PT with effect of endoglucanase activity enhanced in processing fibers,
PT deinking waste paper and improving freeness of paper pulp -

XX Disclosure; Page 75-78; 109pp; Japanese.

XX The invention comprises the amino acid and coding sequences of
CC zygomycetes-originated endoglucanase enzymes lacking the cellulose
CC binding domain. The zygomycetes-originated endoglucanase enzymes of the
CC invention have enhanced endoglucanase activity. The zygomycetes-
CC originated endoglucanase enzymes of the invention are useful for,
CC processing fibers, de-inking waste paper and improving the freeness of
CC paper pulp - which is particularly applicable in detergent compositions.
CC The present DNA sequence represents an endoglucanase-related gene
CC sequence of the invention.

XX Sequence 1164 BP; 272 A; 289 C; 266 G; 337 T; 0 other;

XX (MEIJU) MEIJI SEIKA KAISHA LTD.
 XX Nakamura Y, Moriya T, Baba Y, Yanai K, Sumida N, Nishimura T;
 PI Murashima K, Nakane A, Yaguchi T, Koga J, Murakami T, Kono T;
 XX WPI; 2000-365117/31.
 DR P-PSDB; AAB09823.
 XX Endoglucanases of fungal origin with high activity under alkaline
 PT conditions for production of paper pulp and animal feedstuffs -
 XX Claim 44; Page 113-115; 180pp; Japanese.
 XX This sequence encodes an endoglucanase protein. The invention relates
 CC to an endoglucanase of fungal origin which can completely break down
 CC purified cellulose at a concentration of less than 1mg protein/litre,
 CC and produces more than 50% breakdown of cellulose at pH 8.5. The
 CC invention includes endoglucanase protein sequences (see
 CC AAB09825-B09830), endoglucanase nucleotide sequences (see
 CC AAA62726-A62732) and primers (AAA62733-A62802) which are used in the
 CC identification of the endoglucanase sequences, and in the construction of
 CC vectors containing the polynucleotides. The endoglucanase enzymes are
 CC used for the production of pulp for papermaking and for the production of
 CC animal foodstuffs.
 XX Sequence 1083 BP; 260 A; 297 C; 231 G; 295 T; 0 other;
 SQ

Query Match 34.9%; Score 363.4; DB 21; Length 1083;
 Best Local Similarity 61.3%; Pred. No. 2.9e-69;
 Matches 652; Conservative 0; Mismatches 381; Indels 30; Gaps 3;

QY 9 CTCATCATCGCTTCGCGCCCTTCTCTCGCTGCGAGCTCCACTTACGCTCTGAATGCG 68
 DB 21 CTCCTCGCTATCTTGGCACTTCGCGTGGTGAAGTGAATGCCCATGCTCTGAATGTAG 80
 QY 69 CCAAGGCTATGGCCAGTGTGGTGGCAAGATGTGGACTGTGCTCCACCTGTGTCACCTCCGG 128
 DB 81 CAAGGCTTACTACCAATGTGGTGAAGTGAAGTGGATGGACCTACCTGTGTGAATCTGG 140
 QY 129 CTTACCTGTGTAGTGGCGGAAACAAACGAGTGGTACTCTCAGTGTATCCCAACGATCA 188
 DB 141 CTCCTACTTGGTGTGATATCTGACATCTCTTCTACTCCCAATGTGTGCCAATGAAGA 200
 QY 189 AGT-----CCAGGGAACCCCAAGACCCACCAACCAACCAACCAACCAAGGCTGC 236
 DB 201 CCTCACCTCCTCAACAAATCTTCTCAAAACCAACCACTACTGAGAGTGCCAAAGAC 260
 QY 237 CACTACCAACCAAGGCTCTGTCCACCAACCAAGGCCACCAACCAACCAACCAAGGC 296
 DB 261 TACCCTACTAAGGTTCCAGAGAGACCACTACTGAAGCTCTTAAGAGACCAAC 320
 QY 297 CCTGTCAACCAACCAAGGCTACTACTACCAACCAACCAACCAACCAACCAAGACCA 356
 DB 321 TACTGAAGCTTCCAAGAGAACCACTACTGAAGCTCTTAAGAGAACCAACCACTACTAC 380
 QY 357 CA-----CCACCAAGGCTGCCACCAACCACTCTCTTCCAACTGGCTACAGCCC 407
 DB 381 TAAGAGGCTTCTACCTCCACTCTCTCTCTCTCTCTCTCTCTCTCTCTCTCTCTCTCT 440
 QY 408 CATTTCTGTGGTCTTCTCTGAAACGGTCCGACTTACCCGCTACTTGGGATTTGTCAGGCC 467
 DB 441 TGTCTCTGTGGTCTCTCCGTAATGTGTGAACCACTCGCTACTTGGGATTTGTTGAAGCC 500
 QY 468 CTCCTGGCCCTGGACGGAAGGCTTCTGTAACTAAGCCTGTACTACCTGTGTCGAAGGA 527
 DB 501 TTCTTGAGTGTGGCCGCTAAGGCTGATGTCACTCCCTCTCTCTCTCTCTCTCTCTCTCT 560
 QY 528 TGTGTGAGCGCTCTCGTTCGATGTCAGAGGTTGCTGCGCGCCAGCGCTACAT 587
 DB 561 TGGTAAGACTCTTGTCTGATAACAACTCAAAACGGCTGTGTGTGGTGTAGCAGCTACAC 620
 QY 588 GTGCAATGACAAACCAAGCCCTGGGTTGTCAATGACGACCTTGCCTTACGTTTCGTGCTGC 647

DB 621 CTGTAATGACATCAACCTTGGTGTGTAGCAGGACCTTGCCTACGGTTTCGCGCTGC 680
 QY 648 CAGTCTCGGTAGCGCGGCTCTCTGCTCTGCTCTGCTCTGCTCTGCTCTGCTCTGCTCTC 707
 DB 681 TTCCATTTCTGGTGGTAGCAAGCTACTTGGTGTGTGGTGTGTGGTGTGTGGTGTGTGG 740
 QY 708 CAACACTGCTGCTGCTGGCAAGAAAGTTTGTGCTCCAGGTCCACCAACACCGGTGATGATCT 767
 DB 741 CTCCTACTGCGTCAAGGGTAAGAGATGTTGTTCAAGTAACCAACACTGGTTCTGACCT 800
 QY 768 CAGCACCAAC-----CACTTTGATTGTCAGATGCCCGCGCGGTGGTGTGCGCTACTT 818
 DB 801 TGGCTCTTAACACTGGTGTCTCACTTTCACCTTGAATGCCCGGTGGTGTGGTGTGTGGTATCTA 860
 QY 819 CAAGGCTGCCAGTCCAGTGGAAACCAACACCGATGGCTGGGGTGTGCTGCTATGGCGG 878
 DB 861 CAATGGTTGTGCCACTCAATGGGGTGTCTCCACCGATGGTGGGGTGTGCAAGATACGCGCG 920
 QY 879 TATTAGCTCTATTTCAGAGTGCAGAGTCTTCTACCCAGTTTCAGGCTGTGTTGCAAGTG 938
 DB 921 TGTTCCTTCTGCTCTGACTGTTCTAACTTCTTCTGCTTCAAGCTGGTGTGTAAGTG 980
 QY 939 GAGATTGCGATGTTCAAGAACGCTGCAACACCGAGGTCACTTCAAGGCTGTACTTGTG 998
 DB 981 GAGATTGCGCTGGTTCAAAAACGCTGATAACCAACCACTGACCTACAAACAAGTTACCTG 1040
 QY 999 CCTGCGCGAGTCACTTCCCAAGACTGTTGCGAGCGCAAGTAA 1041
 DB 1041 TCCCAAGGCTATCACTGCGCAAGTCTGGCTGTTCAAGAAATAA 1083

RESULT 8
 AAL43246
 ID AAL43246 standard; DNA; 1083 BP.
 XX
 AC AAL43246;
 AC
 DT 22-AUG-2002 (first entry)
 XX
 DE Rhizopus arrhizus endoglucanase-related coding sequence 3.
 XX
 KW Zygomycetes-originated endoglucanase; cellulose binding domain;
 KW fibre processing; waste paper de-inking; paper pulp; ds; gene.
 XX
 OS Rhizopus arrhizus.
 XX
 PN WO200242474-A1.
 XX
 PD 30-MAY-2002.
 XX
 PF 21-NOV-2001; 2001WO-JP10188.
 XX
 PR 21-NOV-2000; 2000JP-0354296.
 XX
 PA (MEIJU) MEIJI SEIKA KAISHA LTD.
 XX
 PI Nakane A, Baba Y, Koga J, Kubota H;
 XX
 DR WPI; 2002-471729/50.
 DR P-PSDB; AAO15054.
 XX
 PT Cellulose-binding domain-lacking Zygomycetes-originated endoglucanase,
 PT with effect of endoglucanase activity enhanced in processing fibers,
 PT deinking waste paper and improving freeness of paper pulp -
 XX
 PS Disclosure; Page 65-68; 109pp; Japanese.
 XX
 CC The invention comprises the amino acid and coding sequences of
 CC zygomycetes-originated endoglucanase enzymes lacking the cellulose
 CC binding domain. The zygomycetes-originated endoglucanase enzymes of the
 CC invention have enhanced endoglucanase activity. The zygomycetes-
 CC originated endoglucanase enzymes of the invention are useful for

Wed Jun 18 17:55:10 2003

CC processing fibres, de-inking waste paper and improving the freeness of
 CC paper pulp - which is particularly applicable in detergent compositions.
 CC The present DNA sequence represents an endoglucanase-related gene
 CC sequence of the invention.
 XX
 SQ Sequence 1083 BP; 260 A; 297 C; 231 G; 295 T; 0 other;

Query Match 34.9%; Score 363.4; DB 24; Length 1083;
 Best Local Similarity 61.3%; Pred. No. 2.9e-69;
 Matches 652; Conservative 0; Mismatches 381; Indels 30; Gaps 3;

QY 9 CTCATCATCGCTTCGCGCCCTTCTCTCGCTGCGAGCTCCACCTACGCTGCTGAATGACG 68
 DB 21 CTCCTCGCTATCTTGGCACTTGCCTGCGTACTGAAATGGCCCATGCTGCTGAATGAG 80
 QY 69 CCAAGGCTATGGCAGTGTGGTGGCAAGATGTGGACTGTGGTCCCACTGCTGCACTCCGG 128
 DB 81 CNAAGCTTACTACCAATGTGTGTAAGAACTGGGATGGACCTACCTGCTGTGAATCTGG 140
 QY 129 CTTACCTGTGTAGTGGCGGAACACGAGTGTACTCTCAGTGTATCCCAACGATCA 188
 DB 141 CTCTACTTGGCTGATTAATCTGCAATCTCTTCTACTCCCAATGTGTTCCCAATGAAA 200
 QY 189 AGT-----CCAGGGTAACCCCAAGACCAACCAACCAACCAACCAACCAAGGCTGC 236
 DB 201 CCTCACCTCCACTAACAAATCTTCTCAAAACCAACCACTACTGAGAGTGCCCAAGAC 260
 QY 237 CACTACCAACGAGCTCTGTCCACCAACCAACCAACCAACCAACCAACCAACCAAGGC 296
 DB 261 TACCACCTACTAAGGTTTCCAAAGAGACCACTACTGAGGCTCTTAAGAGACCAAC 320
 QY 297 CCCTGTACCAACCAACCAAGGCTTACTTACTTACCACCAACCAACCAACCAACCAAGCC 356
 DB 321 TACTGAAGCTTCCAAAGAGACCACTACTGAGGCTCTTAAGAGACCAACCACTACTAC 380
 QY 357 CA-----CCACCAAGGCTGCGACCAACCACTCTCTTCCCAACTGCTGACGCC 407
 DB 381 TAAGAAGGCTTCTACCTCCACTTCTCTTCTCTCTCTCTCTCTCTCTCTCTCTCTCTCCG 440
 QY 408 CATTTCTGCTGCTTCTCTGAAAGGCTGCGACTACCGCTACTGCGGATGCTCAAGGC 467
 DB 441 TGTCTCTGCTGCTTCTGCGGTAAGGCTGATGTCACCTCCCTCTGTGCTCTCTGTAACAG 500
 QY 468 CTCCTGCGCTGCGGACGAAAGGCTTCTGTAAGGCTTACTTACTTCTGCTGCTGCAAGGA 527
 DB 501 TCTTTCGCTGCTGCGGTAAGGCTGATGTCACCTCCCTCTGTGCTCTCTGTAACAGGA 560
 QY 528 TGGTGTACGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCT 587
 DB 561 TGGTAAGACTCTTGTCTGATAACCACTCAAAACCGGCTGTGTGCTGCTGCTGCTGCTGCT 620
 QY 588 GTGCAATGACACCAAGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCT 647
 DB 621 CTGTAATGCAATCAACTTGGGTTGTTAGCGACGCTTGCCTACGCTTTCGCGCTGCTGCT 680
 QY 648 CAGTCTCGGTAGCGCGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCT 707
 DB 681 TTCCATTTCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCT 740
 QY 708 CAACACTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCT 767
 DB 741 CTCCTACTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCT 800
 QY 768 CAGCACAAC-----CACTTTGATTTGAGATGCTGCTGCTGCTGCTGCTGCTGCTGCTGCT 818
 DB 801 TGGCTCTACACTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCT 860
 QY 819 CAACGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCT 878
 DB 861 CAATGCTTGTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCT 920
 QY 879 TATTAGCTCTATTTCAGATGCGACCAAGCTTCTCTACCCAGTGTGCTGCTGCTGCTGCTGCT 938

DB 921 TGTTTCTTCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCT 980
 QY 939 GAGATTTCGATGCTTCAAGAACGCTGACCAACCCAGAGGTCACTTCAAGGCTGTTACTTGT 998
 DB 981 GAGATTTCGCTGCTTCAAAACGCTGATAACCAACCATGACCTACAAACAAGTTACCTG 1040
 QY 999 CCTTCCGCGATCATTCGCAAGACTGTTGCGAGGCGCAAGTAA 1041
 DB 1041 TCCCAAGGCTATCACTGCGCAAGTCTGCTGTTCAAGAAATAA 1083

RESULT 9
 AAA62732

ID AAA62732 standard; DNA; 1043 BP.

XX AAA62732;

XX 25-SEP-2000 (first entry)

XX Endoglucanase nucleotide sequence 7.

XX Endoglucanase; cellulose breakdown; produce pulp; papermaking;

XX animal foodstuff; ss.

XX Rhizopus oryzae.

XX WO200024879-A1.

XX 04-MAY-2000.

XX 25-OCT-1999; 99WO-JP05884.

XX 23-OCT-1998; 98JP-0302387.

XX (MEIJ) MEIJI SEIKA KAISHA LTD.

XX Nakamura Y, Moriwa T, Baba Y, Yanai K, Sumida N, Nishimura T;

XX Murashima K, Nakane A, Yaguchi T, Koga J, Murakami T, Kono T;

XX WPI; 2000-365117/31.

XX Endoglucanases of fungal origin with high activity under alkaline

XX conditions for production of paper pulp and animal feedstuffs -

XX Claim 44; Page 132-134; 180pp; Japanese.

XX This sequence encodes an endoglucanase protein. The invention relates
 to an endoglucanase of fungal origin which can completely break down
 purified cellulose at a concentration of less than 1mg protein/litre,
 and produces more than 50% breakdown of cellulose at pH 8.5. The
 invention includes endoglucanase protein sequences (see
 AA09825-B09830), endoglucanase nucleotide sequences (see
 AAA62726-A62732) and primers (AAA62733-A62802) which are used in the
 identification of the endoglucanase sequences, and in the construction of
 vectors containing the polynucleotides. The endoglucanase enzymes are
 used for the production of pulp for papermaking and for the production of
 animal foodstuffs.

XX Sequence 1043 BP; 212 A; 370 C; 291 G; 170 T; 0 other;

Query Match 32.1%; Score 333.8; DB 21; Length 1043;

Best Local Similarity 66.5%; Pred. No. 7.2e-63;

Matches 530; Conservative 0; Mismatches 252; Indels 15; Gaps 3;

QY 260 CCACCACCAAGGCCACCAACCAACCAACCAACCAACCAACCAACCAACCAACCAACCAAGG 316

DB 236 CCCCAAGAAGACCAACCAACCAACCAACCAACCAACCAACCAACCAACCAACCAAGGA 295

QY 317 CCCTACTTACTTACCAACCAACCAACCAACCAACCAACCAACCAACCAACCAACCAAGTCC 376

DB 296 CTAGACCGCTCCCGCCCAAGAGACCAACCAACCAACCAACCAACCAACCAACCAACT 355

QY 377 CCACCTCTCTTCCCAACCACTGGCTACAGCCCCCATTTCTGTGGGCTTCTCTGAAACGTC 436

Db 896 CCTCCCGAGCGCCCTCCAGCGCGGTGCGAGTGGCGCTCACTGTTCAAGAACGCCG 955
 Qy 965 ACAACCCAGAGGTCACTTCAAGGCTGTACTTGGCCCTGCCGAGATCATTTGCCAAGACTG 1024
 Db 956 ACAACCGCTCATGACCTACAGAGGTCACTTCCCTGCCAGGAGATCAACCGCTAAGACCG 1015
 Qy 1025 GTTGGAGCGCAAGTAA 1041
 Db 1016 GATGCTCGCGCAAGTAA 1032

RESULT 11

AA62726
 ID AA62726 standard; DNA; 1017 BP.

XX AC

XX AA62726;

XX 25-SEP-2000 (first entry)

XX AC

XX Endoglucanase nucleotide sequence 1.

XX DE

XX Endoglucanase; cellulose breakdown; produce pulp; papermaking;
 animal foodstuff; ss.

XX KW

XX Rhizopus oryzae.

XX OS

XX WO200024879-A1.

XX FN

XX 04-MAY-2000.

XX PD

XX 25-OCT-1999; 99WO-JP05884.

XX PF

XX 23-OCT-1998; 98JP-0302387.

XX PR

XX (MEIJ) MEIJI SEIKA KAISHA LTD.

XX PI

XX Nakamura Y, Moriya T, Baba Y, Yanai K, Sumida N, Nishimura T;

XX PI

XX Murashima K, Nakane A, Yaguchi T, Koga J, Murakami T, Kono T;

XX WPI; 2000-365117/31.

XX DR

XX P-PSDB; AAB09821.

XX PT

XX Endoglucanases of fungal origin with high activity under alkaline
 conditions for production of paper pulp and animal feedstuffs

XX PS

XX Claim 44; Page 104-105; 180pp; Japanese.

XX CC

XX This sequence encodes an endoglucanase protein. The invention relates
 to an endoglucanase of fungal origin which can completely break down
 purified cellulose at a concentration of less than 1mg protein/litre,
 and produces more than 50% breakdown of cellulose at pH 8.5. The
 invention includes endoglucanase protein sequences (see
 AAB09825-A09830), endoglucanase nucleotide sequences (see
 AAB62726-A62732) and primers (AAB62733-A62802) which are used in the
 identification of the endoglucanase sequences, and in the construction of
 vectors containing the polynucleotides. The endoglucanase enzymes are
 used for the production of pulp for papermaking and for the production of
 animal foodstuffs.

XX SQ

XX Sequence 1017 BP; 240 A; 250 C; 235 G; 292 T; 0 other;

XX Query Match

XX Best Local Similarity 29.2%; Score 304.2; DB 21; Length 1017;

XX Matches 616; Conservative 0; Mismatches 353; Indels 60; Gaps 4;

XX 25 GCGCTTCTCTCGTCCAGCTCCACTTACGCTGCTGAATGAGCAGCAAGGCTATGCCAG 84

XX 37 GCTCTCGCCCTCGGTACTGAAATGGCCCTTGTCTGCTGAATGAGCAAAATTGATGTC 96

XX 85 TGTGGTGGCAAGATGGAGTGGTGGTGGTGGTGGTGGTGGTGGTGGTGGTGGTGGTGG 144

XX 97 TGTGGTGGTAAAGACTGGATGGATGGATGGATGGATGGATGGATGGATGGATGGAT 153

Qy 145 GCCGAAACCAACAGTGGTACTCTCAGTGTATCCCAACAGATCAAGTCCAGGGTAACCCC 204
 Db 154 ---GTAAGCAAGATTACTACTCTCAATGTCTTCCCTCTGGAAGCAGTGGCAATAAATCT 210
 Qy 205 AAGACCAACCAACCAACCAACCAACCAACCAACCAACCAACCAACCAACCAACCAACCA 264
 Db 211 TCTGAAAGTGTCTCAAGAAGACTACTGCTGTCTCAAGAAGACTACTACCGCTGCT 270
 Qy 265 ACCAAGGCCACCACCACCACCACCACCACCACCACCACCACCACCACCACCACCACCACC 324
 Db 271 CATAAA-----AAGACTACCACT 288
 Qy 325 ACTACCACCACCACCACCACCACCACCACCACCACCACCACCACCACCACCACCACCACC 384
 Db 289 GCTCTGCTAAGAAGACTACAACTGTGCAAAAGCTTCCACCCCTTCTAACTAGCTCT 348
 Qy 385 TCTTCCAACACTGGCTACAGCCCCCATTTCTGGTGGCTTCTCTGGAACGGTCCGACTACC 444
 Db 349 AGCTCCAGCGCAAAATATTCCGCTGTCTGTGGTGGCTCTGGTAACGGTGTCACTACT 408
 Qy 445 CGCTACTGGGATTGTGCAAGCCCTCTTGGCGCTGGGACGGAAGGCTTCTGTAACTAAG 504
 Db 409 CGTATTGGGATTGTGTAAGCCCTCTGTAGTGGCCGGTAAGGCCCAATGTCACTTCT 468
 Qy 505 CTTGTACTCACTGTGCCAAGGATGGTGTCA---GCCGTCTCGTTCGATGCCAGAGC 561
 Db 469 CCTGTCAAGTCTGTAAACAAGATGGTGTCACTGCCCCTTAGTGACACCAATGCCAAAGT 528
 Qy 562 GGTGGCTGGCGGCCAGCCCTACATGTCAATGACAACAGCCCTGGGTGTGTCAATGAC 621
 Db 529 GGCTGTAAACGGGTGTAACAGTTACATGTGTACGACACCAACCACTTGGGCTGTAAAGC 588
 Qy 622 GACTTGGCTTACGGTTTTCGCTGTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCT 681
 Db 589 AACCTTGGCTATGGTTTCGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCT 648
 Qy 682 TGGCGCTGTAAAGCTTACCTTACCAACACTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCT 741
 Db 649 TGTCTTGTGTTCAAGTACTTCTTCACTTCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCT 708
 Qy 742 CAGGTCAACCAACAGCGTGTATGATCTCAGCACC-----AACCACTTTGATTTGCGAG 792
 Db 709 CAAGTCACTAACACTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCT 768
 Qy 793 ATGCCCGCGGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCT 852
 Db 769 ATGCCCGGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCT 828
 Qy 853 GATGGCTGGGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCT 912
 Db 829 GACGGTTGGGCTCAAGATACGGTGGTATTTCTTGTGCACTGCTGCTGCTGCTGCTGCTGCT 888
 Qy 913 ACCCAGTTGCAAGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCT 972
 Db 889 TCCGCACTCCAAGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCT 948
 Qy 973 GAGGTCACTTCAAGGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCT 1032
 Db 949 AGCATGCACTTCAAGGAAAGTACCTGCTCTTAAAGAAATACCCGCCAAGACAGGTTGTTCA 1008
 Qy 1033 CGCAAGTAA 1041
 Db 1009 AGAAATAA 1017

RESULT 12

AA43244

ID AA43244 standard; DNA; 1017 BP.

XX AC

XX AA43244;

XX DT

XX 22-AUG-2002 (first entry)

| | | |
|----|--|--|
| XX | Rhizopus arrhizus endoglucanase-related coding sequence 1. | |
| DE | | |
| XX | Zygomycetes-originated endoglucanase; cellulose binding domain; | |
| KW | fibromycetes; waste paper de-inking; paper pulp; ds; gene. | |
| XX | | |
| OS | Rhizopus arrhizus. | |
| XX | | |
| PN | WO200242474-A1. | |
| XX | 30-MAY-2002. | |
| XX | | |
| XX | 21-NOV-2001; 2001WO-JP10188. | |
| PF | | |
| XX | 21-NOV-2000; 2000JP-0354296. | |
| XX | (MEIJ) MEIJI SEIKA KAISHA LTD. | |
| XX | | |
| PI | Nakane A, Baba Y, Koga J, Kubota H; | |
| XX | | |
| DR | WPI; 2002-471729/50. | |
| XX | P-PSDB; AAO15052. | |
| XX | | |
| PT | Cellulose-binding domain-lacking Zygomycetes-originated endoglucanase, | |
| PT | with effect of endoglucanase activity enhanced in processing fibers, | |
| PT | deinking waste paper and improving freeness of paper pulp - | |
| XX | | |
| XX | Example 10; Page 56-58; 109pp; Japanese. | |
| XX | | |
| CC | The invention comprises the amino acid and coding sequences of | |
| CC | zygomycetes-originated endoglucanase enzymes lacking the cellulose | |
| CC | binding domain. The zygomycetes-originated endoglucanase enzymes of the | |
| CC | invention have enhanced endoglucanase activity. The zygomycetes- | |
| CC | originated endoglucanase enzymes of the invention are useful for | |
| CC | processing fibres, de-inking waste paper and improving the freeness of | |
| CC | paper pulp - which is particularly applicable in detergent compositions. | |
| CC | The present DNA sequence represents an endoglucanase-related gene | |
| CC | sequence of the invention. | |
| XX | | |
| SQ | Sequence 1017 BP; 240 A; 250 C; 235 G; 292 T; 0 other; | |
| | Query Match 29.2%; Score 304.2; DB 24; Length 1017; | |
| | Best Local Similarity 59.9%; Pred. No. 1.8e-56; | |
| | Matches 616; Conservative 0; Mismatches 333; Indels 60; Gaps 4; | |
| Qy | 25 GCCTTCTCTCGTGCAGCTCCACTTACGCTGCTGAATGACGCCAAGGCTATGGCCAG 84 | |
| Db | 37 GCTCTCGCCCTCGGTACTGAAATGGCCCTCTGCTGTAATGTAGCAAAATTGTATGGTCAA 96 | |
| Qy | 85 TGTGGTGGCAAGATGTGGACTGGTGCACCTGCTGCACCTCCGGCTTCACCTGTGTAGGT 144 | |
| Db | 97 TGTGGTGGTAAGAACTGGAATGGCCCTACTTGTGTGAATCTGGATCCACTGTGAAA- 153 | |
| Qy | 145 GCGCAAAACCAACGAGTGGTACTCTCAGTGTATCCCAACGATCAAGTCCAGGGTAAACCC 204 | |
| Db | 154 ---GTAAGCAACGATTACTACTCTCATGTCTTCCCTCTGGNAGCAGTGGCAATAATCT 210 | |
| Qy | 205 AAGACCAACCAACCAACCAACCAAGGCTGCCACTACCAAGGCTCTGTGCCACACC 264 | |
| Db | 211 TCTGAAAGTGTCAAGAAGAGACTACCACTGCTGCTCACAAGAAGACTACTACCGTGTCT 270 | |
| Qy | 265 ACCAAGGCCACCACCACCACCACCACCAAGGCCCTGTCAACCACCAAGGCCACTACT 324 | |
| Db | 271 CATAAA-----AAGACTACCACCT 288 | |
| Qy | 325 ACTACCACCAACCAAGACCAACCAACCAAGGCTGCCACCAACCAACCACTCC 384 | |
| Db | 289 GCTCTGCTAAGAAGACTACAACCTGTTGCCAAGCTTCCACCCCTTCTTAAGTCTAGCTCT 348 | |
| Qy | 385 TCTTCCAACTGGCTACAGCCCAATTTCTGGTGGCTTCTCTGTAACCGGTGCACTACC 444 | |
| Db | 349 AGCTTCCAGCGGCAAAATATTCGCTGTCTCTGGTGGCTCTCTGTAACCGGTGCACTACT 408 | |

DR WPI; 2000-365117/31.
XX P-PSDB; AAB09822.
PT Endoglucanases of fungal origin with high activity under alkaline
PT conditions for production of paper pulp and animal feedstuffs.
XX
PS Claim 44; Page 108-110; 180pp; Japanese.
XX
XX This sequence encodes an endoglucanase protein. The invention relates
CC to an endoglucanase of fungal origin which can completely break down
CC purified cellulose at a concentration of less than 1mg protein/litre,
CC and produces more than 50% breakdown of cellulose at pH 8.5. The
CC invention includes endoglucanase protein sequences (see
CC AAB09825-B09830), endoglucanase nucleotide sequences (see
CC AAB09825-B09830), and primers (AAB62733-A62802) which are used in the
CC identification of the endoglucanase sequences, and in the construction of
CC vectors containing the polynucleotides. The endoglucanase enzymes are
CC used for the production of pulp for papermaking and for the production of
CC animal foodstuffs.
XX
SQ Sequence 1101 BP; 268 A; 258 C; 257 G; 318 T; 0 other;
Query Match 27.8%; Score 289.6; DB 21; Length 1101;
Best Local Similarity 64.3%; Pred. No. 2.6e-53;
Matches 471; Conservative 0; Mismatches 249; Indels 12; Gaps 2;
QY 322 ACTACTACCAACCAAGACCAACCAAGACCAACCAAGGCTGCCACCAACC 381
DB 370 ACGACTACTACCACTGCTCCGCTAAGGAATTAACAATACTGCAAGCTTCAACTCT 429
QY 382 TCCTCTTCCAACTGGGTACAGCCCATTTCTGGTGGTCTCTGGAACGGTGCACCT 441
DB 430 TCTAACTCTAGCGCAATACTCCATTGTCTCTGGTGGTGGTCTGTAACGGTGTCACT 489
QY 442 ACCCGCTACTGGGATTTGTCGAAGCCCTCTTGGCTGGGACCAAGGCTTCTGTAACT 501
DB 490 ACTCGTATTGGGATTTGTCGAAGCCCTCTTGGCTGGGACCAAGGCTTCTGTAACT 549
QY 502 AAGCGTGTACTACCTGTGCGCAAGGATGGTGTCTA---GCCGTCTCGGTTCCGATGTCAG 558
DB 550 TCTCCTGTCAAGTCTCTGTAAACAAAGATGGTGTCACTGCCCTTAGTCAGCAAGATGTC 609
QY 559 AGCGGTGCTGCGCGGCGGAGCTTACATGTGCAATACACACAGCCCTGGTGTGCAAT 618
DB 610 AGTGGCTGTAAACCGGTGTAAACAGTTACATGTGTAAACACACAGCCCTGGGCTGTAAAC 669
QY 619 GACGACCTTGCTACGGTTTCGCTGCTGCGCAAGTCTCGGTAGCGCGGCTCTGCAATC 678
DB 670 GATTAATCTTGCTATGTTTTCGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCT 729
QY 679 TGCTGCGGCTGTATACGAGCTTACCTTACCACCAACTGCTGCTGCGCAAGGATTTGTC 738
DB 730 TGCTGTCTTCTGTTTTCGAAGTCTTCTTCACTTCTTCACTTCTGCTGCTGCTGCTGCT 789
QY 739 GTCCAGGTGCTACCAACCGGTGATGATCTAGCAACCAAC-----CACTTTGATTTG 789
DB 790 ATCCAAAGTCACTAAACACTGGTGGTGTGCTTCTTGGCTTCTTCTGCTGCTGCTGCTGCT 849
QY 790 CAGATGCCCGGCTGGTGTGCTGCTTCTTCAACCGGCTGCCAGTCCCAAGTGGCAACCAAC 849
DB 850 CAATGCGCGGTGGTGTGCTGCTTCTTCAATGGTGGTGGTGGTGGTGGTGGTGGTGGTGG 909
QY 850 ACCGATGCTGGGTGCTGCTGCTATGCGGATTAATGCTTATTTTCAGAGTGGCAAGCTT 909
DB 910 AATGACGGTGGGCTCGAGATACGGTGGTATTTCTTCTGCTGCTGCTGCTGCTGCTGCTGCT 969
QY 910 CCTACCGAGTGGGCTGGTGGTGGTGGTGGTGGTGGTGGTGGTGGTGGTGGTGGTGGTGGT 969
DB 970 CTTCCGACCTCCAAAGCTGGTGGTGGTGGTGGTGGTGGTGGTGGTGGTGGTGGTGGTGGTGG 1029
QY 970 CCAGAGGTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCT 1029
DB 1030 CCAAGCATGCTTACAAAGGATTTACCTGTGCTCCCAAGGAATCAACCGCAAGACAGGTTGT 1089

QY 1030 GAGCGCACTAA 1041
DB 1090 TCAAGAAATAA 1101

RESULT 14

AAAL43245
ID AAL43245 standard; DNA; 1101 BP.

XX
AC AAL43245;

DT 22-AUG-2002 (first entry)

XX Rhizopus arrhizus endoglucanase-related coding sequence 2.

XX Zygomycetes-originated endoglucanase; cellulose binding domain;
KW fibre processing; waste paper de-inking; paper pulp; ds, gene.

XX Rhizopus arrhizus.

XX WO200242474-A1.

XX 30-MAY-2002.

XX 21-NOV-2001; 2001WO-JP10188.

XX 21-NOV-2000; 2000JP-0354296.

XX (MEIJ) MEIJI SEIKA KAISHA LTD.

XX Nakane A, Baba Y, Koga J, Kubota H;

XX WPI; 2002-471729/50.

XX P-PSDB; AAO15053.

PT Cellulose-binding domain-lacking Zygomycetes-originated endoglucanase,
PT with effect of endoglucanase activity enhanced in processing fibers,
PT deinking waste paper and improving freeness of paper pulp -

XX Disclosure; Page 60-63; 109pp; Japanese.

XX The invention comprises the amino acid and coding sequences of
CC zygomycetes-originated endoglucanase enzymes lacking the cellulose
CC binding domain. The zygomycetes-originated endoglucanase enzymes of the
CC invention have enhanced endoglucanase activity. The zygomycetes-
CC originated endoglucanase enzymes of the invention are useful for
CC processing fibres, de-inking waste paper and improving the freeness of
CC paper pulp - which is particularly applicable in detergent compositions.
CC The present DNA sequence represents an endoglucanase-related gene
CC sequence of the invention.

SQ Sequence 1101 BP; 268 A; 258 C; 257 G; 318 T; 0 other;

Query Match 27.8%; Score 289.6; DB 24; Length 1101;
Best Local Similarity 64.3%; Pred. No. 2.6e-53;
Matches 471; Conservative 0; Mismatches 249; Indels 12; Gaps 2;
QY 322 ACTACTACCAACCAAGACCAACCAAGACCAACCAAGGCTGCCACCAACC 381
DB 370 ACGACTACTACCACTGCTCCGCTAAGGAATTAACAATACTGCAAGCTTCAACTCT 429
QY 382 TCCTCTTCCAACTGGGTACAGCCCATTTCTGGTGGTCTCTGGAACGGTGCACCT 441
DB 430 TCTAACTCTAGCGCAATACTCCATTGTCTCTGGTGGTGGTCTGTAACGGTGTCACT 489
QY 442 ACCCGCTACTGGGATTTGTCGAAGCCCTCTTGGCTGGGACCAAGGCTTCTGTAACT 501
DB 490 ACTCGTATTGGGATTTGTCGAAGCCCTCTTGGCTGGGACCAAGGCTTCTGTAACT 549
QY 502 AAGCGTGTACTACCTGTGCGCAAGGATGGTGTCTA---GCCGTCTCGGTTCCGATGTCAG 558
DB 550 TCTCCTGTCAAGTCTCTGTAAACAAAGATGGTGTCACTGCCCTTAGTCAGCAAGATGTC 609

Wed Jun 18 17:55:10 2003

Job time : 232.07 secs